USER MANUAL

Longo programmable controller
LPC-2.DT1 module

Version 2

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User Manual

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STANDARDS AND PROVISIONS: Standards, recommendations, regulations and provisions of the country in which the devices will operate, must be considered while planning and setting up electrical devices. Work on 230 VAC network is allowed for authorized personnel only.
DANGER WARNINGS: Devices or modules must be protected from moisture, dirt and damage during transport, storing and operation.
WARRANTY CONDITIONS: For all modules LONGO LPC-2 – if no modifications are performed upon and are correctly connected by authorized personnel – in consideration of maximum allowed connecting power, we offer warranty for 24 months from date of sale to end buyer. In case of claims within warranty time, which are based on material malfunctions the producer offers free replacement. The method of return of malfunctioned module, together with description, can be arranged with our authorized representative. Warranty does not include damage due to transport or because of unconsidered corresponding regulations of the country, where the module is installed.

This device must be connected properly by the provided connection scheme in this manual. Misconnections may result in device damage, fire or personal injury.
Hazardous voltage in the device can cause electric shock and may result in personal injury or death.
NEVER SERVICE THIS PRODUCT YOURSELF!
This device must not be installed in the systems critical for life (e.g. medical devices, aircrafts, etc.).
If the device is used in a manner not specified by the manufacturer, the degree of protection provided by the equipment may be impaired.

Waste electrical and electronic equipment (WEEE) must be collected separately!

LONGO LPC-2 complies to the following standards:

- EMC:EN 61000-6-2 (EN 50082), EN 61000-6-4 (EN 50081)
- LVD: IEC 61131-2
- Vibrations and climatic-mechanical: EN 60068-2-6, EN 60068-2-27, EN 60068-2-29

Smarteh d.o.o. operates a policy of continuous development. Therefore we reserve the right to make changes and improvements to any of the products described in this manual without any prior notice.

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1 DESCRIPTION

LPC-2.DT1 control panel (CP) is used to switch on and off four individual or group of lights.

Panel is equipped with four touch buttons (TB), temperature sensor and light intensity sensor. To switch on or off individual or group of lights , corresponding TB should be pressed respectively.

For example if first light is switched off, light symbol next to TB1 on LCD will represent off status. After TB1 pressing, light symbol next to TB1 on LCD will represent on status and on command will be sent to MCU. When TB1 is pressed next time, light symbol next to TB1 on LCD will change and show off status. Light off command will be sent to MCU. From MCU side, remote on and off switching off four individual or group of lights is also supported.

Color back ground LCD picture is possible to change by using Smarteh LCD Composer software. Light intensity sensor controls LCD intensity.

It is possible to display real time clock (HH:MM). Enabling can be done by MCU enable commands.

All parameters are accessible on panel's communication port. When panel is connected to the LPC-2 main control unit (MCU) parameters can be viewed and modified with LPC Manager application.

LPC-2.DT1 parameters allows adaptation to desired panel functionality.

2 FEATURES

Figure 1: LPC-2.DT1 module

Table 1: Features
4 touch buttons to switch light on/off
4 light symbols to show lights on/off status
Temperature measurement
Light intensity measurement
LCD intensity control
Color LCD with possibility of back ground picture changing

3 OPERATION

Basic switching can be done with panel Touch Buttons (TB).
Modes of operation and commands can be set via LPC Manager software.

It is advised to press touch-buttons respectively with finger not faster than 1 press per second.

Press should be done with whole finger tip. Brief pressing could not activate the action, because of protection against the noise and other influence.

3.1 Operational modes

Normal mode
When CP is connected and communicating with MCU, all available functions are active

Error
In case of CP internal on communication fault, "ERR" sign appear on LCD.

Set
When any of four buttons is pressed more than certain time, "SET" sign appear on LCD and buttons functioning is enabled. After "SET" sign is off, push buttons functions are disabled.

3.2 Parameters

If parameter is set to logical "1", is considered to be active, enabled or set. If parameter has logical value "0" is considered to be inactive, disabled, or cleared.

Parameter can be status, command or both. When parameter is marked as status this means that module is sending information to controller. On the other hand, command represents request from MCU to module.

***Light x (Off/On) status*:** When any of four statuses is active, command for individual light on is requested. Corresponding light on symbol is present on LCD screen. If status is not active, command for individual light off is requested. Corresponding light off symbol is present on LCD screen.

***Light x (Local/Remote) status*:** Active status is telling that corresponding light on/off command is controlled by light on command from MCU. When this status is not active, local light on/off commands are enabled.

***Communication status*:** Feed back of communication flag, received from MCU. Used for communication diagnose between MCU and CP.

***Light Off MIN value**: Feed back of Light Off MIN value received from MCU. Below this set value, LCD back light will turn off. Value 0 .. 100 represents 0 .. 100 % light intensity.*

Actual temp.: *Actual room temperature 0 .. 5000 represents 0,00.. 50,00°C.*

Actual light: *Actual room light intensity 0..100 represents 0 .. 100%.*

Light x (Off/On) command: *remote On/Off command for individual light. This command is enabled using corresponding Light x (Local/Remote) command.*

Light x (Local/Remote) command: *Enables corresponding light On/Off remote command.*

Clock display enable command: *Time Clock display enable command from MCU. When active, time will be displayed on CP.*

Light Off MIN set value: *Below this set value, LCD back light will turn off. Value 0 .. 100 represents 0 .. 100 % light intensity.*

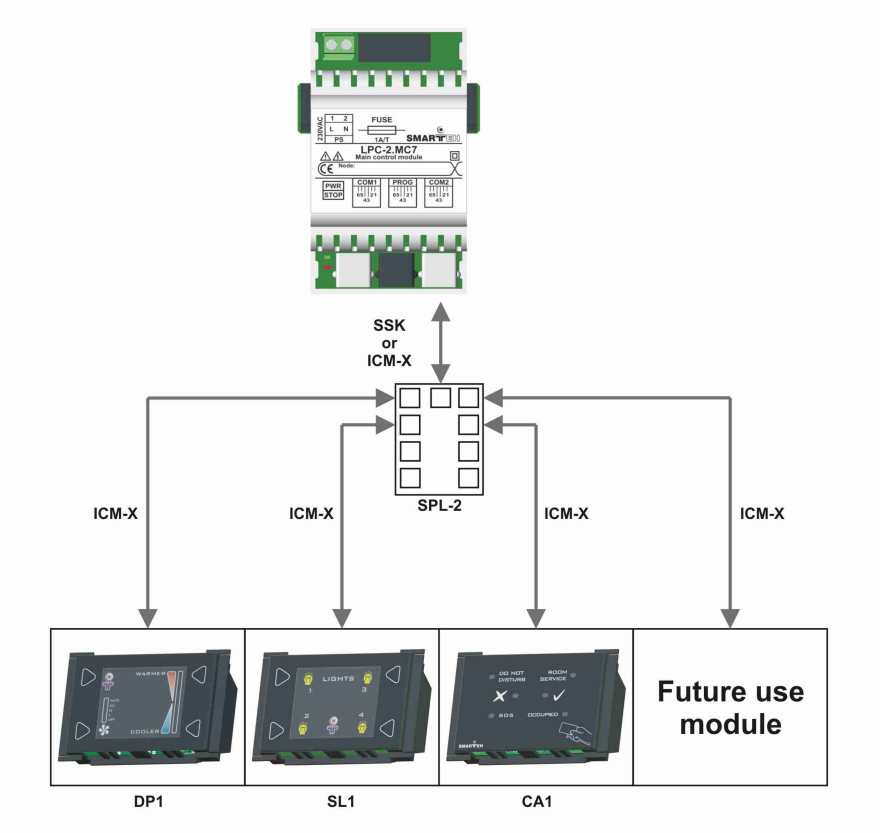
***Clock set value*:** Clock to be displayed on LCD in HH:MM format. High byte of an unsigned integer variable represents hours (HH) and low byte represents minutes (MM). For example value 2592 ([10*256]+32 = 2592) will be represented as 10:32.

Communication: *Used for communication diagnose between MCU and CP. Normally this bit is toggled every 1 second from MCU side and than Communication feed back status is supervised on the MCU side.*

4 INSTALLATION

4.1 Connection scheme

Figure 2: Connection scheme



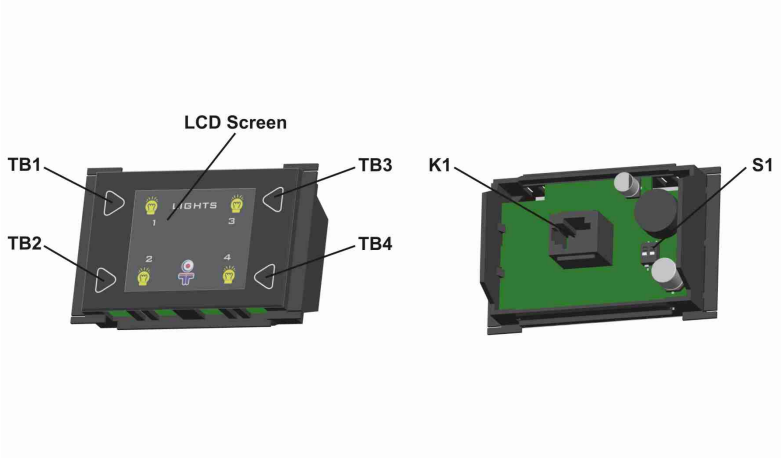
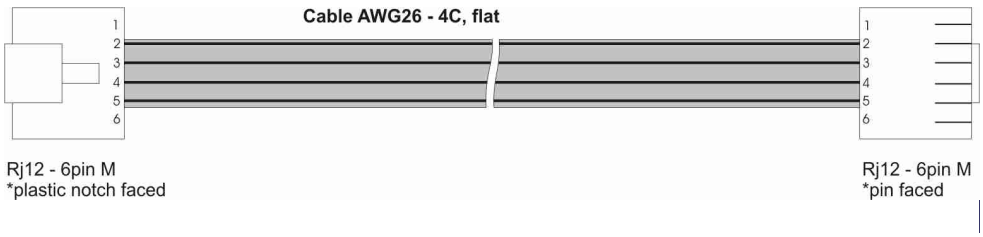


Table 2: K1		
K1.1	GND	Ground
K1.2	7- 30 VDC	Power supply input
K1.3	Standard RS485 A	Data receive/send line A
K1.4	Standard RS485 B	Data receive/send line B

Table 3: LCD bars & Buttons		
TB1 (Up-left)	Light 1	Switch light 1 on/off, status is shown on LCD next to TB1
TB2 (Down-left)	Light 2	Switch light 2 on/off, status is shown on LCD next to TB2
TB3 (Up-right)	Light 3	Switch light 3 on/off, status is shown on LCD next to TB3
TB4 (Down-right)	Light 4	Switch light 4 on/off, status is shown on LCD next to TB4

Table 4: S1		
RS485 ADDRESS	**Switch 1**	**Switch 2**
0	OFF	OFF
1	OFF	ON
2	ON	OFF
3	ON	ON

Interconnection cable can ordered from Smarteh or terminated on site, considering wiring scheme bellow:



Interconnection cable ICM-X

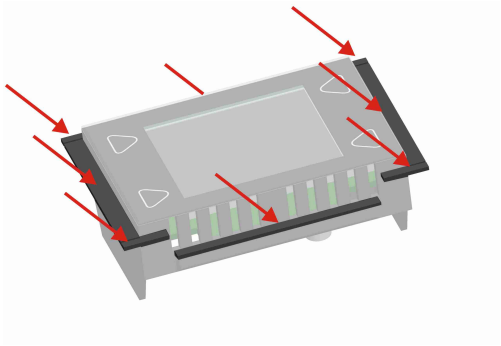
4.2 Mounting frame selection

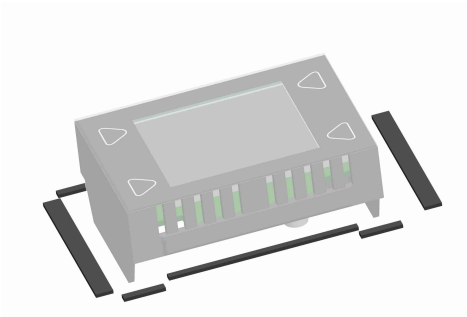
Smarteh has verified following lines to be compatible with LPC-2.DT1 module:

- Bticino – Living, Light
- Gewiss – Playbus, System
- Vimar – Plana, Idea
- Tem – Modul Soft, Modul Line
- Master

Frames of other vendors most probably suits as well, but they were not verified by Smarteh. Before installation verify compatibility of non listed frames.

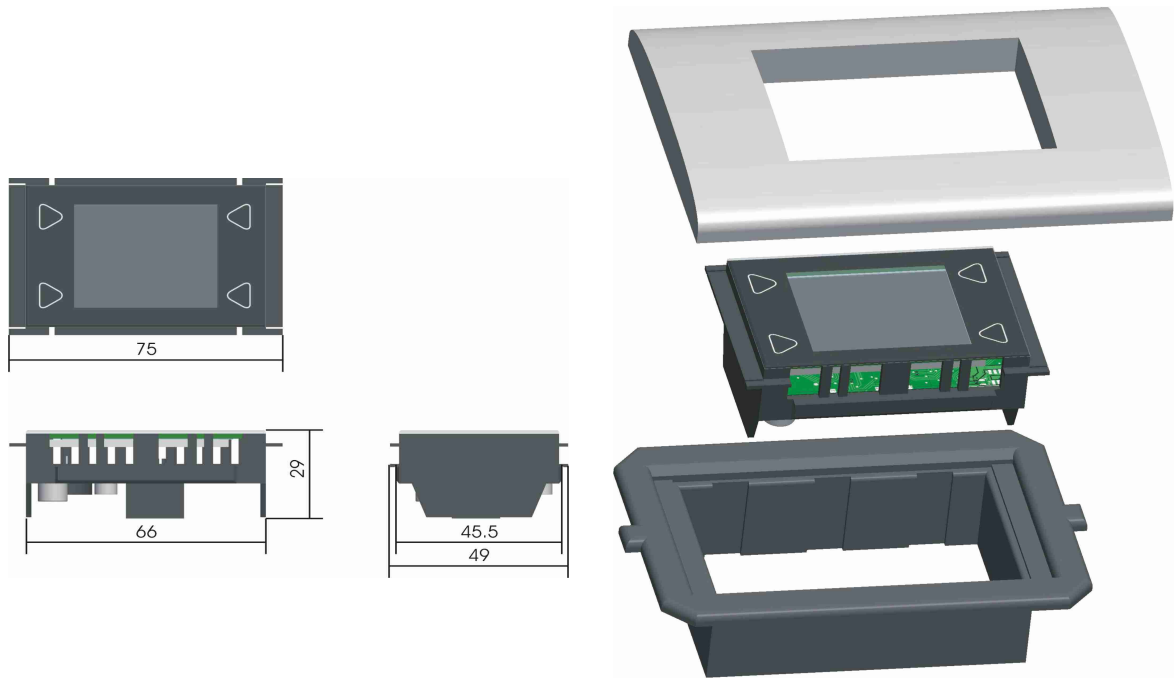
Module housing has a fin on each side, which can be easily removed with knife cutter or pliers. This adaptation enables housing to be build in various frame formats with two different depths. With regard to frame used you may remove fin for housing to fit in.





4.3 Mounting instructions

Figure 3: Housing dimensions



- Dimensions in millimeters.

All connections, module attachments and assembling must be done while module is not connected to the main power supply.
Module should be positioned in the wall inside of the room. Avoid direct sunlight or positioning near heating/cooling source object.
Usage of cover frames and holders made of metal, could cause the decreased performance of touch buttons
Recommended installation height is 1,5 m above floor level.

1. Set the correct RS485 address (S1 switch) for LPC-2.DT1 (refer to the Table 4).
2. Connect interconnection cable to the connector K1. Max. allowed tensile force is 30 N.
3. Put the LPC-2.DT1 in mounting frames
4. Cover LPC-2.DT1 with cover plate

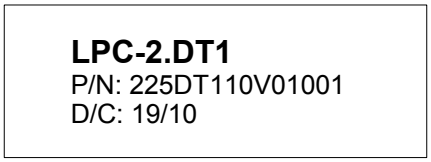
LPC-2.DT1 is connected to the main control unit with interconnection cable (e.g., SSK, ICM-7) which must be ordered together with LPC-2.DT1 module. When more modules (e.g., LPC-2.CR1, LPC-2.CH1, LPC-2.DP2 or up to four LPC-2.DT1) are connected to main control unit, splitter (e.g., SPL-2) is also required (Figure 2). Module address on RS485 network is set with DIP switch on the back of the module (Table 4).

NOTE: Signal wires must be installed separately from power and high voltage wires in accordance with general industry electrical installation standard.

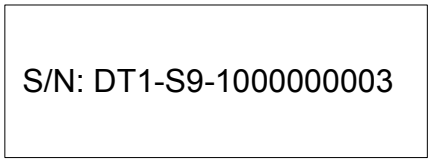
4.4 Module labeling

Figure 5: Labels

Label 1:



Label 2:



Label 1 description:

- **LPC-2.DT1** is the full product name
- P/N: 225DT110V01001 is the part number
  - 225 – general code for LPC-2 product family,
  - DT1 – short product name,
  - 10 – year of code opening
  - V - denotes flush frame mounting module
  - 01 – derivation code
  - 001 – version code (reserved for future HW and/or SW firmware upgrades).
- D/C: 19/10 is the date code.
  - 19 – week and
  - 10 – year of production

Label 2 description:

- S/N: DT1-S9-0900000003 is the serial number.
  - DT1 – short product name,
  - S9 – user code (test procedure, e.g. Smarteh person xxx),
  - 10 – year (last two cyphers)
  - 00000003 – current stack number; previous module would have the stack number 00000002 and the next one 00000004

5 TECHNICAL SPECIFICATIONS

Table 5: Technical specifications	
Power supply	from MCU
Interconnection connector type	RJ12 6/6
Power consumption	1 W
Dimensions (W x H x D)	75 x 49 x 29 mm
Weight	50 g
Maximum altitude	2000 m
Mounting position	horizontal
Ambient temperature	0 to 50 °C
Ambient humidity	max. 95 %, no condensation
Transport and storage temperature	-20 to 60 °C
Protection class	IP 20

6 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
1.7.2012	002	CGP General update.
15.11.2010	001	The initial version, issued as *LPC-2.DT1 module UserManual*.

7 NOTES